

FREEHOLD REGIONAL HIGH SCHOOL DISTRICT

OFFICE OF CURRICULUM AND INSTRUCTION

TECHNOLOGY EDUCATION DEPARTMENT

HONORS INNOVATION & DESIGN

Grade Level: 11-12

Credits: 5

BOARD OF EDUCATION ADOPTION DATE:

AUGUST 30, 2010

[SUPPORTING RESOURCES AVAILABLE IN DISTRICT RESOURCE SHARING](#)

APPENDIX A: ACCOMMODATIONS AND MODIFICATIONS

APPENDIX B: ASSESSMENT EVIDENCE

APPENDIX C: INTERDISCIPLINARY CONNECTIONS

Course Philosophy

Design & Innovation promotes personal growth, leadership, and opportunities in technology, innovation, design, and engineering. Students apply and integrate science, technology, engineering and mathematics concepts through co-curricular activities, competitive events and related programs.

Course Description

Honors Innovation and Design provides an advanced level course that encompasses student work from all areas of technology education. It offers a project-based and collaborative approach to real-world 21st century challenges. Students in this course will participate in dynamic and competitive activities that emphasize critical and creative thinking. Students will select areas of study that will challenge them to design under specific constraints. This course promotes leadership skills and career awareness.

**Freehold Regional High School District
Curriculum Map**

Honors Innovation & Design

Relevant Standards ¹	Enduring Understandings	Essential Questions	Assessments		
			Diagnostic (before)	Formative (during)	Summative (after)
8.1.12.C.1; F.2; 8.2.8.A.1, B.2; 9.1.12.A.1, B.3, E.4, F.1, 9.2.12.A.5; 9.3.12.C.20	In the 21 st Century, students will face design challenges unlike those in the past.	How does technology help assist you in the learning process? What impact has technology had on the environment, society, economy and politics? What are some challenges that a designer will face due to the always changing technology?	Class discussion to gather interests	Evaluate work in progress. Reflect and modify if necessary	Project Based Learning. Grading Rubric
8.2.12.B.2, E.1, F.1.3; 9.1.12.A.4, B.1	Students develop unique skills and abilities that contribute to technology specific solutions.	What are some steps in the Design Process that require the understanding of certain hands-on skills? What areas of Technology are you most interested in exploring?			
1.1.12.D.1, 8.1.12.C.1,E.1-2, 8.2.12.G.1 9.1.12.B.3, C.1, C.4-5, F.2	Use of unique skills and abilities can assist others in solution development.	What unique skill do you bring to this class? How will you show others how to utilize your skills to enhance their projects? How can you be successful working collaboratively in a group?			
8.1.12.A.4, 8.2.12.F.1-3, C.2, 9.1.12.F.2-3, 9.3.12.C.5, 11, 16	Accepting a professional quality lifestyle will result in productive members of society and lifelong learners.	Why is it important to consistently produce a professional quality product? What types of documentation are essential for the successful planning and design of a project? What are some of the essential guidelines in creating and maintaining a safe working environment?			
8.2.12.A.1, B.1-2, D.1, E.1, F.1-3, G.1	Developing ideas into tangible working models through hands-on activities, leads to higher knowledge retention.	Why is it so important to embrace learning through listening, reading, recording, creating and providing feedback? What considerations are made when selecting appropriate materials for a project? What are some of the benefits of being able to provide an accurate working prototype when presenting a possible solution?			
8.1.12.A.3-4, C.1, E.1, 8.2.12.C.1-3, G.1, 9.1.12.A.2-4, B.1-3, C.1-5, D.1-3, E.1, 3, F.1-6	Technology allows us to become more effective communicators.	What have been some major changes in communication over the last two decades? What are some effective ways to digitally present an idea to a broad range of audience sizes?			

Relevant Standards ¹	Enduring Understandings	Essential Questions	Assessments		
			Diagnostic (before)	Formative (during)	Summative (after)
8.1.12.F.2, 9.1.12.F.1-6, 9.2.12.A.1-2, 4-5, 9.3.12.C.1-3, 5-8, 10-11, 20,	In the 21st century, life and work are conducted in a dynamic context that includes a service economy driven by information, knowledge, and innovation.	<p>What Technology based careers are available to me?</p> <p>What preparations can I make now in order to make a seamless transition to higher education and then the workplace?</p> <p>What knowledge and skills are necessary to prepare and navigate the globally competitive work environment in the information age?</p>	Class discussion to gather interests	Evaluate work in progress. Reflect and modify if necessary	Project Based Learning. Grading Rubric
8.1.12.C.1, D.1-2, E.1-2, 8.2.12.B.3, C.2, G.1, 9.3.12.C.21	Constructive criticism of ones work and the work of another is critical in the innovation and design process.	<p>Why is it important to find problems in a potential solution?</p> <p>How do I constructively provide feed back and suggestions to another without insult or prejudice?</p> <p>Is my idea a viable solution to a real-world problem?</p>			

**Freehold Regional High School District
Course Proficiencies and Pacing**

Honors Innovation & Design

Unit Title	Unit Understandings and Goals	Recommended Duration
Unit #1: Designing for 21 st Century Challenges	In the 21 st Century, students will face design challenges unlike those in the past. - Students will develop an appreciation of how the design process has changed and evolved in the 21 st Century.	4 weeks
Unit #2: Exploring an Area of Expertise	Students develop unique skills and abilities that contribute to technology specific solutions. - Students will be able to identify their specific area of expertise. - Students will be able to choose a regionally based competition related to their specific ability.	4 weeks
Unit #3: Collaboration and Peer Instruction	Use of unique skills and abilities can assist others in solution development. - Students will be able to share specific knowledge with others to create a collaborative working environment.	4 weeks
Unit #4: Fostering Professionalism in Work	Accepting a professional quality lifestyle will result in productive members of society and lifelong learners. - Students will be able to create and maintain a safe, reliable and professional working environment.	4 weeks
Unit #5: Prototype Development	Developing ideas into tangible working models through hands-on activities, leads to higher knowledge retention. - Students will be able to develop ideas into working models and prototypes.	8 weeks
Unit #6: Presenting in the Digital Age	Technology allows us to become more effective communicators. - Students will utilize digital media devices to become efficient and effective communicators.	4 weeks
Unit #7: Design-based Career Paths	In the 21st century, life and work are conducted in a dynamic context that includes a service economy driven by information, knowledge, and innovation. - Students will develop a working understanding of potential career paths.	3 weeks
Unit #8: Evaluation and Critique	Constructive criticism of ones work and the work of another is critical in the innovation and design process. - Students will be able to effectively and constructively provide feedback on the work of others.	3 weeks

**Freehold Regional High School District
Honors Innovation & Design**

Unit #1: Designing for 21st Century Challenges

Enduring Understanding: In the 21st Century, students will face design challenges unlike those in the past.

Essential Questions: How does technology help assist you in the learning process?

What impact has technology had on the environment, society, economy and politics?

What are some challenges that a designer will face due to the always changing technology?

Unit Goal: Students will develop an appreciation of how the design process has changed and evolved in the 21st Century.

Duration of Unit: 3-4 weeks

NJCCCS: 8.1.12.C.1, F.2, 8.2.8.A.1, 8.2.2.B.2, 9.1.12.A.1,B.3, E.4, F.1, 9.2.12.A.5,9.3.12.C.20

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What is technology and how does it impact the world we live in?	Technological Impacts on the Environment, Society, Economy and Politics	Current textbook and resource binders	Provide a copy of the design loop Product comparisons Activity -Select a technological product and evaluate the pros, cons and impacts	Written tests and quizzes
What types of problems can be solved through the use of technology?	Design Loop Process: Identifying a problem	Student workbooks	Provide technological solutions to a major natural or man made disaster such as Hurricane Katrina, the earthquake in Haiti, or the 9-11 attacks on the World Trade Center	Worksheets
How can a problem be written to assure the solution can be assessed?	Design Loop Process: Frame the design brief	Internet	Develop a design brief activity –Use a selection of newspaper articles to write valid design briefs	Project assessments
What methods can be used to successfully research solutions to a design brief?	Design Loop Process: Research and Investigation	Magazines	Teacher developed scavenger hunts	Article summaries
How many alternate solutions are necessary to come up with a valid solution to a problem?	Design Loop Process: Developing alternate solutions Making appropriate considerations when developing alternates	Newspapers	Activity – Teacher poses a technological problem and have students work in teams to develop alternate solutions	Notebook assessments
What criteria should be used when assessing and choosing the best solution?	Design Loop Process: Selecting the best solution	Videos / Video clips	Product comparison activity Create a morphological matrix using alternate solutions	Responses to discussion questions
What type of designing needs to be completed before modeling and prototyping can begin?	Design Loop Process Developmental work	PowerPoint	Drawing and sketching activities: include perspective drawings, gridding and scaling and orthographic technical drawings	Journal assessments
What materials are suitable for use in modeling and prototyping? And how are they processed safely and efficiently?	Design Loop Process Modeling and Prototyping	Parents	Demonstrate and show samples of various materials being processed	Threaded Discussion Groups
What criteria can be used to evaluate the solution? Did the solution successfully solve the design brief posed?	Design Loop Process Testing and Evaluation	Community resources	Examine TSA rubrics and evaluative criteria used in competitions	Self and Peer assessments
What modifications could be made to improve the solution? What is innovation vs. invention?	Design Loop Process Evaluation and re-implementation	Moodle	Complete a peer evaluation of projects previously entered into a TSA competition	TSA Rubrics
Suggestions on how to differentiate in this unit:				

- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers may also provide ancillary materials and reteaching assignments to students who require additional practice on the content, themes, concepts, and skills of this unit.
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.

**Freehold Regional High School District
Honors Innovation & Design**

Unit #2: Exploring an Area of Expertise

Enduring Understanding: Students develop unique skills and abilities that contribute to technology specific solutions.

Essential Questions: What are some steps in the Design Process that require the understanding of certain hands-on skills?
What areas of Technology are you most interested in exploring?

Unit Goals: Students will be able to identify their specific area of expertise.
Students will be able to choose a regionally based competition related to their specific ability.

Duration of Unit: 3-4 weeks

NJCCCS: 8.2.12.B.2, 8.2.12.E.1, 8.2.12.F.1, 8.2.12.F.3, 9.1.12.A.4, 9.1.12.B.1

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What competitive events are available to me?	Competition Selection Explore TSA and other possible competition schedules Connect competitive events to area of expertise	Current textbook and resource binders Student workbooks	Students will conduct a research based activity in order to discover competitive events in which they may excel	Written tests and quizzes Worksheets
What aspects of Video Communication are effective to this class?	Video Communication Understanding Premiere and After Effects Creating Digital Production	Internet Magazines Newspapers	Students will research, compare and contrast events in which Video Communication are a main area of competition	Project assessments Article summaries Notebook assessments
What aspects of Technology Design are effective to this class?	Technology Design Understanding tools and safe uses Prototyping and modeling	Videos Parents	Students will research, compare and contrast events in which Technology Design are a main area of competition	Responses to discussion questions
What aspects of CADD are effective to this class?	CADD Understanding Pro Desktop/Engineering Create working designs and blueprints	Community resources	Students will research, compare and contrast events in which CAD design are a main area of competition	Journal assessments TSA Rubrics
What aspects of Digital Media/Graphics are effective to this class?	Digital Media/Graphics Understanding Illustrator and Photoshop Digital and Print Design	TSA competitive events catalog	Students will research, compare and contrast events in which Graphics are a main area of competition	
<p>Suggestions on how to differentiate in this unit:</p> <ul style="list-style-type: none"> • Teachers may employ cooperative learning strategies to facilitate peer assistance to all students. • A wide variety of assessments and strategies complement the individual learning experience. • Teachers may also provide ancillary materials and reteaching assignments to students who require additional practice on the content, themes, concepts, and skills of this unit. • Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods. 				

**Freehold Regional High School District
Honors Innovation & Design**

Unit #3: Collaboration and Peer Instruction

Enduring Understanding: Use of unique skills and abilities can assist others in solution development.

Essential Questions: What unique skill do you bring to this class?

How will you show others how to utilize your skills to enhance their projects?

How can you be successful working collaboratively in a group?

Unit Goal: Students will be able to share specific knowledge with others to create a collaborative working environment.

Duration of Unit: 4-5 weeks

NJCCCS: 1.1.12.D.1, 8.1.12.C.1, 8.1.12.E.1-2, 8.2.12.G.1, 9.1.12.B.3, 9.1.12.C.1, 9.1.12.C.4-5, 9.1.12.F.2

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
How can collaborative learning benefit all?	Collaborative Learning Working together to share knowledge and ideas Discovering how students can assist each other during the project development process	Current textbook and resource binders Student workbooks Internet	Students will conduct a research based activity to discover competitive events in which they can excel	Written tests and quizzes Worksheets Project assessments
What aspects of Video Communication can I apply to a different area?	Video Communication Understanding Premiere and After Effects Creating Digital Production	Magazines Newspapers	Students will research, compare and contrast events in which Video Communication is a secondary learning area in a particular competition	Article summaries Notebook assessments
What aspects of Technology Design can I apply to a different area?	Technology Design Understanding tools and safe uses Prototyping and modeling	Videos Parents	Students will research, compare and contrast events in which Technology Design is a secondary learning area in a particular competition	Responses to discussion questions Journal assessments
What aspects of CADD can I apply to a different area?	CADD Understanding Pro Desktop/Engineering Create working designs and blueprints	Community resources TSA competitive events catalog	Students will research, compare and contrast events in which CAD design is a secondary learning area in a particular competition	TSA Rubrics
What aspects of Digital Media/Graphics can I apply to a different area?	Digital Media/Graphics Understanding Illustrator and Photoshop Digital and Print Design		Students will research, compare and contrast events in which Graphics is a secondary learning area in a particular competition	

Suggestions on how to differentiate in this unit:

- Teachers may employ cooperative learning strategies to facilitate peer assistance to all students.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers may also provide ancillary materials and reteaching assignments to students who require additional practice on the content, themes, concepts, and skills of this unit.
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.

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Honors Innovation & Design**

Unit #4: Fostering Professionalism in Work

Enduring Understanding: Accepting a professional quality lifestyle will result in productive members of society and lifelong learners.

Essential Questions: Why is it important to consistently produce a professional quality product?

What types of documentation are essential for the successful planning and design of a project?

What are some of the essential guidelines in creating and maintaining a safe working environment?

Unit Goal: Students will be able to create and maintain a safe, reliable and professional working environment.

Duration of Unit: 4-5 weeks

NJCCCS: 8.1.12.A.4, 8.2.12.F.1-3, 8.2.12.C.2, 9.1.12.F.2-3, 9.3.12.C.5, 9.3.12.C.11, 9.3.12.C.16

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What characteristics does a professional piece of work have?	Fostering Professionalism Attention to detail Neatness	Current textbook and resource binders Student workbooks	Demos on the attention to detail that are important during a project	Written tests and quizzes Worksheets
Why is it important to document ones work throughout a project?	Documentation techniques Organization Document Preparation Document Presentation	Internet Magazines Newspapers	Activity on documentation practices that are important during a project	Project assessments Article summaries Notebook assessments
How can one maintain a safe working environment?	Working Safely in the Lab Safe practices Hazards Machine safety Maintenance and clean-up	Videos Parents Community resources	General safety rules and regulations that cover the lab area as a whole Safe practices 100% of the time	Responses to discussion questions Journal assessments

Suggestions on how to differentiate in this unit:

- Teachers may employ cooperative learning strategies to facilitate peer assistance to all students.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers may also provide ancillary materials and reteaching assignments to students who require additional practice on the content, themes, concepts, and skills of this unit.
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.

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Unit #5: Prototype Development

Enduring Understanding: Developing ideas into tangible working models through hands-on activities, leads to higher knowledge retention.

Essential Questions: Why it is so important to embrace learning through listening, reading, recording, creating and providing feedback.

What considerations are made when selecting appropriate materials for a project?

What are some of the benefits of being able to provide an accurate working prototype when presenting a possible solution?

Unit Goal: Students will be able to develop ideas into working models and prototypes.

Duration of Unit: 8-10 weeks

NJCCCS: 8.2.12.A.1, 8.2.12.B.1-2 8.2.12.D.1, 8.2.12.E.1, 8.2.12.F.1-3, 8.2.12.G.1

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What is the difference between a model and a prototype?	Types of models and prototypes: Appearance working models prototypes	Current textbook and resource binders Student workbooks	PowerPoint Presentation Activity – Have students identify samples as particular types of models/prototypes	Written tests and quizzes Worksheets
What materials and production processes are essential in technological design and problem solving?	Physical properties of materials Strength Durability Ductility Hardness Brittleness Stability Conductivity Elasticity	Internet Magazines Newspapers Videos / Video clips	Materials experiments and testing	Project assessments Article summaries Notebook assessments Responses to discussion questions
What factors must be considered before selecting material/s for a model or prototype?	Materials Selection Physical properties Cost Aesthetic value Technological impacts Safe processing of material	PowerPoint Parents Community resources Moodle	Activity – Selecting the best material for the project	Journal assessments Threaded Discussion Groups Self and Peer assessments
What skills do I need to possess to develop a unique prototype?	Specialty Area Development Competition specifications of chosen event	TSA Curricular Resource Guide CD	Student teams will be developing the prototypes and components for the specific competitions chosen	TSA Rubrics
<p>Suggestions on how to differentiate in this unit:</p> <ul style="list-style-type: none"> • Teachers may employ cooperative learning strategies to facilitate peer assistance to all students. • A wide variety of assessments and strategies complement the individual learning experience. • Teachers may also provide ancillary materials and reteaching assignments to students who require additional practice on the content, themes, concepts, and skills of this unit. • Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods. 				

**Freehold Regional High School District
Honors Innovation & Design**

Unit #6: Presenting in the Digital Age

Enduring Understanding: Technology allows us to become more effective communicators.

Essential Questions: What have been some major changes in communication over the last two decades?

What are some effective ways to digitally present an idea to a broad range of audience sizes?

Unit Goal: Students will utilize digital media devices to become efficient and effective communicators.

Duration of Unit: 4-5 weeks

NJCCCS: 8.1.12.A.3-4, 8.1.12.C.1, 8.1.12.E.1, 8.2.12.C.1-3, 8.2.12.G.1, 9.1.12.A.2-4, 9.1.12.B.1-3, 9.1.12.C.1-5, 9.1.12.D.1-3, 9.1.12.E.1, 9.1.12.E.3, 9.1.12.F.1-6

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
What traits and skills make an effective presenter?	Effective Podium Presenting Speaking clearly Proper posture Eye Contact Professional Dress Attire Engaging the Audience	Current textbook and resource binders Student workbooks Internet	Explore rhetoric speeches, 90-sec pop topic speeches, timed prepared speeches Extemporaneous Speech	Written tests and quizzes Worksheets Project assessments
How can I create an effective engaging Power Point Presentation?	PPT design and presentation Slide design Transitions Paraphrasing information Links and A/V within the PPT	Magazines Newspapers Videos	Demos on good vs. bad PPTs Practice creating and presenting PPTs	Article summaries Notebook assessments Responses to discussion questions
How can a personalized webpage help present my ideas?	Webpage design Using software to design a webpage Organizing information for the web Creating a web document that is user friendly.	Parents Community resources	Demo and activities on Frontpage, Dreamweaver, or similar one-step webpage generators	Journal assessments Technology Students Association State Competition result
How can a video help enhance my presentation skills?	Video Creating demos and advertisements for projects Linking this media to a webpage		Prepare videos outlining and demonstrating a project Students become salesmen	

Suggestions on how to differentiate in this unit:

- Teachers may employ cooperative learning strategies to facilitate peer assistance to all students.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers may also provide ancillary materials and reteaching assignments to students who require additional practice on the content, themes, concepts, and skills of this unit.
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.

**Freehold Regional High School District
Honors Innovation & Design**

Unit #7: Design-based Career Paths

Enduring Understanding: In the 21st century, life and work are conducted in a dynamic context that includes a service economy driven by information, knowledge and innovation.

Essential Questions: What knowledge and skills are necessary to prepare and navigate the globally competitive work environment in the information age?
 What Technology based careers are available to me?
 What preparations can I make now in order to make a seamless transition to higher education and then the workplace?

Unit Goal: Students will develop a working understanding of potential career paths.

Duration of Unit: 2-3 weeks

NJCCCS: 8.1.12.F.2, 9.1.12.F.1-6, 9.2.12.A.1-2, 9.2.12.A.4-5, 9.3.12.C.1-3, 9.3.12.C.5-8, 9.3.12.C.10-11, 9.3.12.C.20,

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
Where can I continue my studies in my area of choice?	Undergraduate Programs College or Universities Trade or Specialty schools Topic specific coursework	Current textbook and resource binders Student workbooks Internet	Utilize the Guidance department to create activities based on undergraduate program discovery PPT Research Paper Poster board presentation	Written tests and quizzes Worksheets Project assessments
What technology based careers are available to me?	Exploring technology careers careers regional location need for employment earnings and benefits requirements for employment	Magazines Newspapers Videos	Research based study resulting in PPT, Research paper, etc.	Article summaries Notebook assessments Responses to discussion questions
How can I better prepare myself for the next step in my technology career?	Pre-Graduation opportunities Internships Volunteer work Apprenticeships Job Shadowing Field Trip to related corporations	Parents Community resources Naviance Guidance	Utilize local business opportunities for students to research	Journal assessments Technology Students Association State Competition result

Suggestions on how to differentiate in this unit:

- Teachers may employ cooperative learning strategies to facilitate peer assistance to all students.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers may also provide ancillary materials and reteaching assignments to students who require additional practice on the content, themes, concepts, and skills of this unit.
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**Freehold Regional High School District
Honors Innovation & Design**

Unit #8: Evaluation and Critique

Enduring Understanding: Constructive criticism of ones work and the work of another is critical in the innovation and design process.

Essential Questions: Why is it important to find problems in a potential solution?

How do I constructively provide feed back and suggestions to another without insult or prejudice?

Is my idea a viable solution to a real-world problem?

Unit Goal: Students will be able to effectively and constructively provide feedback on the work of others.

Duration of Unit: 3-4 weeks

NJCCCS: 8.1.12.C.1, 8.1.12.D.1-2, 8.1.12.E.1-2, 8.2.12.B.3, 8.2.12.C.2, 8.2.12.G.1, 9.3.12.C.21

Guiding / Topical Questions	Content, Themes, Concepts, and Skills	Instructional Resources and Materials	Teaching Strategies	Assessment Strategies
How can a person protect their ideas from being stolen?	Intellectual property rights Patent Copyright Trademark	Current textbook and resource binders	PowerPoint Presentation	Written tests and quizzes Worksheets
Did someone already develop my idea into a commercialized product?	Patent Searches Online searches Patent attorney	Student workbooks Internet Magazines/ Newspapers	Teacher Demonstration on how to conduct an online patent search Activity – Conduct patent searches on items found inside the classroom / lab Guest speaker – Patent Attorney	Project assessments Article summaries
Is an invention worth patenting?	Self and Peer Assessment Consumer surveys Self reflection Peer evaluations Human needs vs. human wants Consumer demand Ergonomic and anthropometric considerations	Videos / Video clips PowerPoint Parents	Activity – Examine products that have not become popular and discuss why Then examine products that have soared in popularity very quickly Discussion – What makes some products catch on quickly within society	Notebook assessments Responses to discussion questions
How do you patent an invention or innovation?	Steps in the patent process Process and procedure Types of patents Costs Length of property rights Legal issues Proving ownership of an idea	Community resources Moodle TSA Curricular Resource Guide CD	Activity – Divide into teams and select a project that was developed during the year to patent Develop a mock patent application for the product	Journal assessments Threaded Discussion Groups
Is a product concept producible or should the idea be licensed to a manufacturer?	Modern production methods Mass production Raising capital Developing a business plan Licensing a patent Commercialization options of a product	Lemelson MIT Inventor's Handbook U.S. Patent Office	Capstone project – As a design team, develop a business plan for a new company to manufacture market and sell a project of your choice to the mass market through a formal presentation	Self and Peer assessments TSA Rubrics

Suggestions on how to differentiate in this unit:

- Teachers may employ cooperative learning strategies to facilitate peer assistance to all students.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers may also provide ancillary materials and reteaching assignments to students who require additional practice on the content, themes, concepts, and skills of this unit.
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.

